**In the Claims:**

Claims 1-113 (Canceled).

114. (New) A process of producing a polymer comprising:

(a) providing hydroxyl-carboxyl protomers; and

(b) condensing said hydroxyl-carboxyl protomers to form the polymer.

115. (New) The process of claim 114, wherein at least one of said hydroxyl-carboxyl protomers has a structure of:

$Y\text{-}CHR_aCOOH$

wherein:

Y is a proteinaceous material, OH or $NH_2$; and

$R_a$ is selected from the group consisting of $-(CH_2)_3\text{-}NH\text{-}C(NH_2)(=NH)$, $-(CH_2)_3\text{-}NH\text{-}C(OH)(=NH)$, $-(CH_2)_4NH_2$, $-(CH_2)_4OH$, $-CH_2OH$, $-CHOHCH_3$, $-CH_2\text{-}C_6H_4$ p-OH, $-CH_2CONH_2$, $-CH_2COOH$, $-(CH_2)_2CONH_2$, $-(CH_2)_2COOH$, $-CH_2SH$, –H, $-CH_3$, $-CH_2c(C{=}CH\text{-}N{=}CH\text{-}NH\text{-})$, $-CH(CH_3)CH_2CH_3$, $-CH_2CH(CH_3)_2$, $-(CH_2)_2SCH_3$,

$-CH_2C_6H_5$, $-CH_2\text{-}c(C{=}CH\text{-}NH\text{-}Ph\text{-})$, and $-CH(CH_3)_2$.

116. (New) The process of claim 114, wherein at least one of said hydroxyl-carboxyl protomers has a structure

$Y\text{-}CHRaCO\text{-}[NHRnCO]n\text{–}NHRcCO\text{-}OH$

wherein:

n is 0 or a positive integer;

Y is a proteinaceous material, OH or $NH_2$; and

$R_a$, $R_c$ and each one of $R_n$ is independently selected from the group consisting of $-(CH_2)_3\text{-}NH\text{-}C(NH_2)(=NH)$, $-(CH_2)_3\text{-}NH\text{-}C(OH)(=NH)$, $-(CH_2)_4NH_2$, $-(CH_2)_4OH$, $-CH_2OH$, $-CHOHCH_3$, $-CH_2\text{-}C_6H_4$ p-OH, $-CH_2CONH_2$, $-CH_2COOH$, $-(CH_2)_2CONH_2$, $-(CH_2)_2COOH$, $-CH_2SH$, –H, $-CH_3$, $-CH_2c(C{=}CH\text{-}N{=}CH\text{-}NH\text{-})$, $-CH(CH_3)CH_2CH_3$, $-CH_2CH(CH_3)_2$, $-(CH_2)_2SCH_3$, $-CH_2C_6H_5$, $-CH_2\text{-}c(C{=}CH\text{-}NH\text{-}Ph\text{-})$, and $-CH(CH_3)_2$.

117. (New) The process of claim 114, wherein said providing said hydroxyl-carboxyl protomers comprises:

(i) providing a protein-containing substrate; and either or both

(ii) replacing primary amines of proteinaceous components of said protein-containing substrate with hydroxyl groups; and / or

(iii) replacing amide groups of proteinaceous components of said protein-containing substrate with carboxyl groups;

so as to make said protomers from said proteinaceous components.

118. (New) The process of claim 117, wherein said providing said hydroxyl-carboxyl protomers comprises:

(i) providing a protein-containing substrate; and

(ii) replacing primary amines of proteinaceous components of said protein-containing substrate with hydroxyl groups;

so as to make said protomers from said proteinaceous components.

119. (New) The process of claim 117, wherein said providing said hydroxyl-carboxyl protomers comprises:

(i) providing a protein-containing substrate; and

(ii) replacing amide groups of proteinaceous components of said protein-containing substrate with carboxyl groups;

so as to make said protomers from said proteinaceous components.

120. (New) The process of claim 117, wherein prior to said replacing, proteinaceous compounds in said protein containing substrate are hydrolyzed.

121. (New) The process of claim 117, wherein said replacing comprises reacting said proteinaceous compounds with nitrous acid or nitrous oxides.

122. (New) The process of claim 114, wherein said reacting takes place in an aqueous reaction solution, the pH of said aqueous reaction solution is adjusted by the addition of at least one compound, said at least one compound being selected from the group consisting of amine, carboxylic acid and a conjugate base of a carboxylic acid.

123. (New) A process of producing a polymer comprising:

(a) providing hydroxyl-carboxyl protomers;

(b) providing at least one copolymer;

(c) combining said hydroxyl-carboxyl protomers with said at least one copolymer to make a precursor mix; and

(d) condensing molecules in said precursor mix to form the polymer.

124. (New) The process of claim 123, wherein said condensing is reaction of a hydroxyl group of a first protomer with a carboxyl group of a second protomer so as to form an inter-protomer ester bond.

125. (New) The process of claim 123, wherein said condensing is bond-forming reaction of a first functional group of a first protomer with a second functional group of a copolymer molecule and a bond-forming reaction of a third functional group of a second protomer with a fourth functional group of said copolymer molecule.

126. (New) The process of claim 123, wherein said copolymer is monofunctional, having only one functional group.

127. (New) The process of claim 123, wherein said copolymer is monofunctional, having at least two functional groups.

128. (New) The process of claim 123, wherein said condensing is performed at a temperature of lower than about 180°C.

129. (New) The process of claim 123, wherein said condensing is performed at a temperature of lower than about 150°C.

130. (New) The process of claim 123, wherein said condensing is performed in the presence of a catalyst.

131. (New) A polymer made according to the process of claim 114.

132. (New) A polymer comprising at least one bond A-B, wherein

A is selected from the group of radicals consisting of:

$(NHX)(COY)CH\text{-}(CH_2)_3\text{-}NH\text{-}C(=NH)O\cdot$

$(NHX)(COY)CH\text{-}(CH_2)_4O\cdot$

$(NHX)(COY)CH\text{-}CH_2O\cdot$

$(NHX)(COY)CH\text{-}CHCH_3O\cdot$

$(NHX)(COY)CH\text{-}CH_2\text{-}C_6H_4$ p-$O\cdot$

and $Y\text{-}CO\text{-}CHR_A\text{-}O\cdot$

and

B is selected from the group of radicals consisting of

$(NHW)(COZ)CH\text{-}CH_2\text{-}C(=O)\cdot$

$(NHW)(COZ)CH\text{-}(CH_2)_2\text{-}C(=O)\cdot$

and $WNHCHR_BC(=O)\cdot$

wherein $R_A$ and $R_B$ are independently selected from the group consisting of: $-(CH_2)_3\text{-}NH\text{-}C(NH_2)(=NH)$, $-(CH_2)_3\text{-}NH\text{-}C(OH)(=NH)$, $-(CH_2)_4NH_2$, $-(CH_2)_4OH$, $-CH_2OH$, $-CHOHCH_3$, $-CH_2\text{-}C_6H_4$ p-OH, $-CH_2CONH_2$,$-CH_2COOH$, $-(CH_2)_2CONH_2$, $-(CH_2)_2COOH$, $-CH_2SH$, –H, $-CH_3$, $-CH_2c(C=CH\text{-}N=CH\text{-}NH\text{-})$, $-CH(CH_3)CH_2CH_3$, $-CH_2CH(CH_3)_2$, $-(CH_2)_2SCH_3$, $-CH_2C_6H_5$, $-CH_2\text{-}c(C=CH\text{-}NH\text{-}Ph\text{-})$ and $-CH(CH_3)_2$ and wherein W, X, Y and Z are independently selected from the group consisting of H or a proteinaceous material.

133. (New) The polymer of claim 132 comprising at least two bonds A-B.

134. (New) The polymer of claim 132 comprising at least five bonds A-B.

135. (New) The polymer of claim 132, wherein:

A is a $(NHX)(COY)CH\text{-}(CH_2)_3\text{-}NH\text{-}C(=NH)O\cdot$ radical; and

B is a $(NHW)(COZ)CH\text{-}CH_2\text{-}C(=O)\cdot$ radical.

136. (New) The polymer of claim 132, wherein:

A is a $(NHX)(COY)CH\text{-}(CH_2)_4O\cdot$ radical; and

B is a $(NHW)(COZ)CH\text{-}CH_2\text{-}C(=O)\cdot$ radical.

137. (New) The polymer of claim 132, wherein:
A is a (NHX)(COY)CH-$CH_2O$· radical; and
B is a (NHW)(COZ)CH-$CH_2$-C(=O)· radical.

138. (New) The polymer of claim 132, wherein:
A is a (NHX)(COY)CH-$CHCH_3O$· radical; and
B is a (NHW)(COZ)CH-$CH_2$-C(=O)· radical.

139. (New) The polymer of claim 132, wherein:
A is a (NHX)(COY)CH-$CH_2$-$C_6H_4$ p-O· radical; and
B is a (NHW)(COZ)CH-$CH_2$-C(=O)· radical.

140. (New) The polymer of claim 132, wherein:
A is a Y-CO-$CHR_A$-O· radical; and
B is a (NHW)(COZ)CH-$CH_2$-C(=O)· radical.

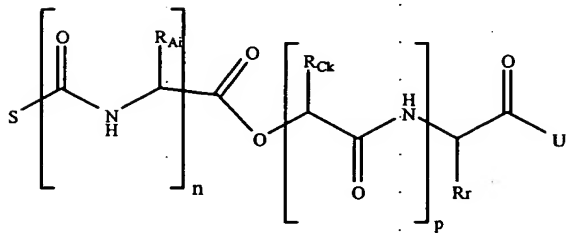
141. (New) The polymer of claim 132, wherein:
A is a (NHX)(COY)CH-$(CH_2)_3$-NH-C(=NH)O· radical; and
B is a (NHW)(COZ)CH-$(CH_2)_2$-C(=O)· radical.

142. (New) The polymer of claim 132, wherein:
A is a (NHX)(COY)CH-$(CH_2)_4O$· radical; and
B is a (NHW)(COZ)CH-$(CH_2)_2$-C(=O)· radical.

143. (New) The polymer of claim 132, wherein:
A is a (NHX)(COY)CH-$CH_2O$· radical; and
B is a (NHW)(COZ)CH-$(CH_2)_2$-C(=O)· radical.

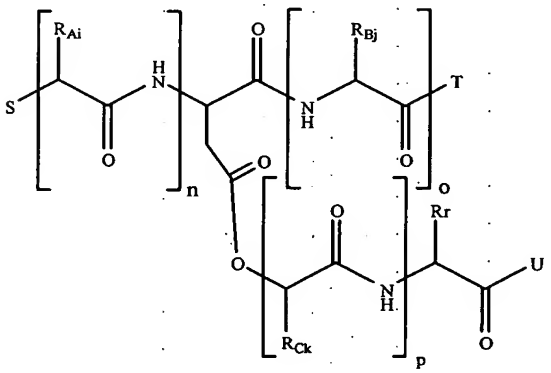
144. (New) The polymer of claim 132, wherein:
A is a Y-CO-$CHR_A$-O· radical; and
B is a WNHCH$R_B$C(=O)· radical.

145. (New) A polymer of the structure:



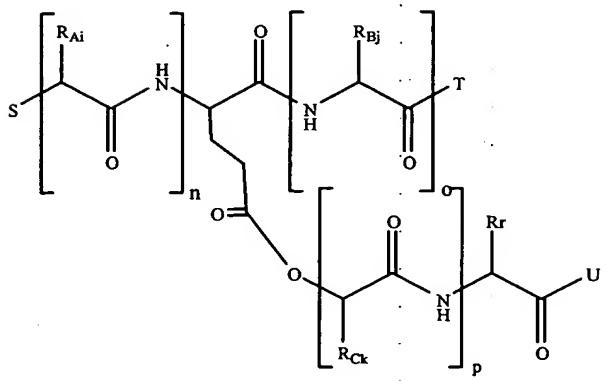
wherein n, o, p and q are 0 or a positive integer; i, j, k and l, if existing, are from 1 to n, o, p and q, respectively; each $R_r$, $R_{Ai}$, $R_{Bj}$, $R_{Ck}$ and $R_{Dl}$ is independently selected from the group consisting of -$(CH_2)_3$-NH-C($NH_2$)(=NH), -$(CH_2)_3$-NH-C(OH)(=NH), -$(CH_2)_4NH_2$, -$(CH_2)_4OH$, -$CH_2OH$, -$CHOHCH_3$, -$CH_2$-$C_6H_4$ p-OH, -$CH_2CONH_2$, -$CH_2COOH$, -$(CH_2)_2CONH_2$, -$(CH_2)_2COOH$, -$CH_2SH$, –H, -$CH_3$, -$CH_2$c(C=CH-N=CH-NH-), -$CH(CH_3)CH_2CH_3$, -$CH_2CH(CH_3)_2$, -$(CH_2)_2SCH_3$, -$CH_2C_6H_5$, -$CH_2$-c(C=CH-NH-Ph-), and –$CH(CH_3)_2$; and, wherein S, T, U and V is independently selected from the group consisting of H, OH, $NH_2$ or a proteinaceous material.

146. (New) A polymer of the structure:



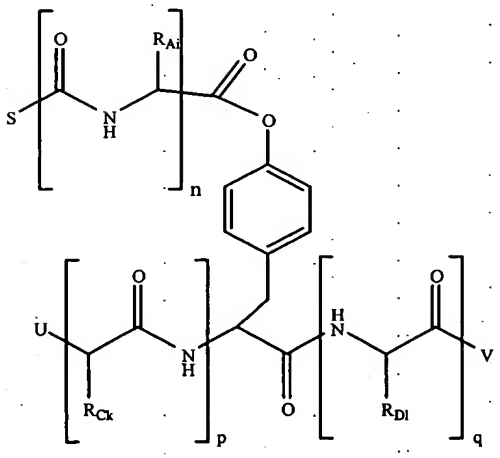
wherein n, o, p and q are 0 or a positive integer; i, j, k and l, if existing, are from 1 to n, o, p and q, respectively; each $R_r$, $R_{Ai}$, $R_{Bj}$, $R_{Ck}$ and $R_{Dl}$ is independently selected from the group consisting of -$(CH_2)_3$-NH-C($NH_2$)(=NH), -$(CH_2)_3$-NH-C(OH)(=NH), -$(CH_2)_4NH_2$, -$(CH_2)_4OH$, -$CH_2OH$, -$CHOHCH_3$, -$CH_2$-$C_6H_4$ p-OH, -$CH_2CONH_2$, -$CH_2COOH$, -$(CH_2)_2CONH_2$, -$(CH_2)_2COOH$, -$CH_2SH$, –H, -$CH_3$, -$CH_2$c(C=CH-N=CH-NH-), -$CH(CH_3)CH_2CH_3$, -$CH_2CH(CH_3)_2$, -$(CH_2)_2SCH_3$, -$CH_2C_6H_5$, -$CH_2$-c(C=CH-NH-Ph-), and –$CH(CH_3)_2$; and, wherein S, T, U and V is independently selected from the group consisting of H, OH, $NH_2$ or a proteinaceous material.

147. (New) A polymer of the structure:



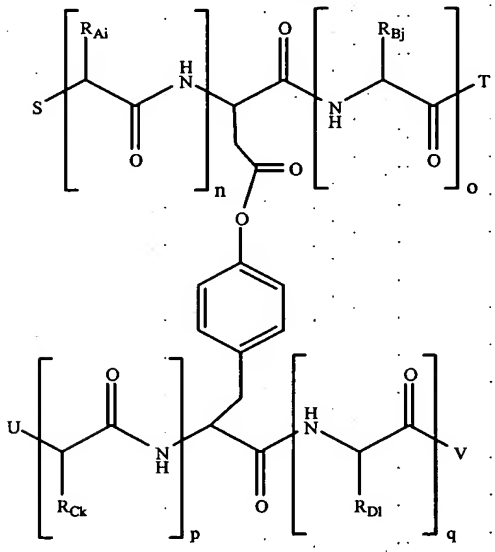
wherein n, o, p and q are 0 or a positive integer; i, j, k and l, if existing, are from 1 to n, o, p and q, respectively; each $R_r$, $R_{Ai}$, $R_{Bj}$, $R_{Ck}$ and $R_{Dl}$ is independently selected from the group consisting of $-(CH_2)_3-NH-C(NH_2)(=NH)$, $-(CH_2)_3-NH-C(OH)(=NH)$, $-(CH_2)_4NH_2$, $-(CH_2)_4OH$, $-CH_2OH$, $-CHOHCH_3$, $-CH_2-C_6H_4$ p-OH, $-CH_2CONH_2$, $-CH_2COOH$, $-(CH_2)_2CONH_2$, $-(CH_2)_2COOH$, $-CH_2SH$, –H, $-CH_3$, $-CH_2c(C=CH-N=CH-NH-)$, $-CH(CH_3)CH_2CH_3$, $-CH_2CH(CH_3)_2$, $-(CH_2)_2SCH_3$, $-CH_2C_6H_5$, $-CH_2-c(C=CH-NH-Ph-)$, and $-CH(CH_3)_2$; and, wherein S, T, U and V is independently selected from the group consisting of H, OH, $NH_2$ or a proteinaceous material.

148. (New) A polymer of the structure:



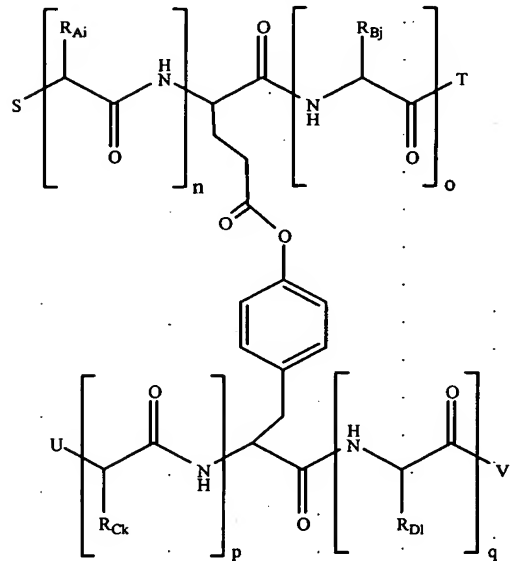
wherein n, o, p and q are 0 or a positive integer; i, j, k and l, if existing, are from 1 to n, o, p and q, respectively; each $R_r$, $R_{Ai}$, $R_{Bj}$, $R_{Ck}$ and $R_{Dl}$ is independently selected from the group consisting of $-(CH_2)_3-NH-C(NH_2)(=NH)$, $-(CH_2)_3-NH-C(OH)(=NH)$, $-(CH_2)_4NH_2$, $-(CH_2)_4OH$, $-CH_2OH$, $-CHOHCH_3$, $-CH_2-C_6H_4$ p-OH, $-CH_2CONH_2$, $-CH_2COOH$, $-(CH_2)_2CONH_2$, $-(CH_2)_2COOH$, $-CH_2SH$, –H, $-CH_3$, $-CH_2c(C=CH-N=CH-NH-)$, $-CH(CH_3)CH_2CH_3$, $-CH_2CH(CH_3)_2$, $-(CH_2)_2SCH_3$, $-CH_2C_6H_5$, $-CH_2-c(C=CH-NH-Ph-)$, and $-CH(CH_3)_2$; and, wherein S, T, U and V is independently selected from the group consisting of H, OH, $NH_2$ or a proteinaceous material.

149. (New) A polymer of the structure:



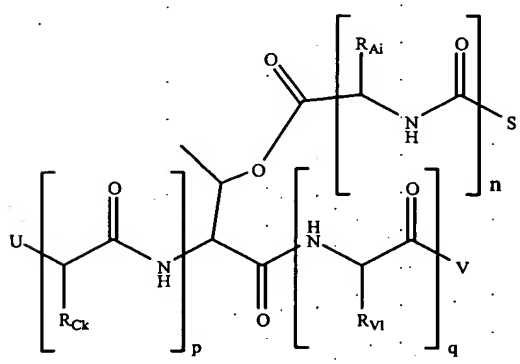

wherein n, o, p and q are 0 or a positive integer; i, j, k and l, if existing, are from 1 to n, o, p and q, respectively; each $R_r$, $R_{Ai}$, $R_{Bj}$, $R_{Ck}$ and $R_{Dl}$ is independently selected from the group consisting of $-(CH_2)_3-NH-C(NH_2)(=NH)$, $-(CH_2)_3-NH-C(OH)(=NH)$, $-(CH_2)_4NH_2$, $-(CH_2)_4OH$, $-CH_2OH$, $-CHOHCH_3$, $-CH_2-C_6H_4$ p-OH, $-CH_2CONH_2$, $-CH_2COOH$, $-(CH_2)_2CONH_2$, $-(CH_2)_2COOH$, $-CH_2SH$, –H, $-CH_3$, $-CH_2c(C=CH-N=CH-NH-)$, $-CH(CH_3)CH_2CH_3$, $-CH_2CH(CH_3)_2$, $-(CH_2)_2SCH_3$, $-CH_2C_6H_5$, $-CH_2-c(C=CH-NH-Ph-)$, and $-CH(CH_3)_2$; and, wherein S, T, U and V is independently selected from the group consisting of H, OH, $NH_2$ or a proteinaceous material.

150. (New) A polymer of the structure:



wherein n, o, p and q are 0 or a positive integer; i, j, k and l, if existing, are from 1 to n, o, p and q, respectively; each $R_r$, $R_{Ai}$, $R_{Bj}$, $R_{Ck}$ and $R_{Dl}$ is independently selected from the group consisting of -$(CH_2)_3$-NH-C$(NH_2)$(=NH), -$(CH_2)_3$-NH-C(OH)(=NH), -$(CH_2)_4NH_2$, -$(CH_2)_4OH$, -$CH_2OH$, -$CHOHCH_3$, -$CH_2$-$C_6H_4$ p-OH, -$CH_2CONH_2$, -$CH_2COOH$, -$(CH_2)_2CONH_2$, -$(CH_2)_2COOH$, -$CH_2SH$, –H, -$CH_3$, -$CH_2$c(C=CH-N=CH-NH-), -$CH(CH_3)CH_2CH_3$, -$CH_2CH(CH_3)_2$, -$(CH_2)_2SCH_3$, -$CH_2C_6H_5$, -$CH_2$-c(C=CH-NH-Ph-), and –$CH(CH_3)_2$; and, wherein S, T, U and V is independently selected from the group consisting of H, OH, $NH_2$ or a proteinaceous material.

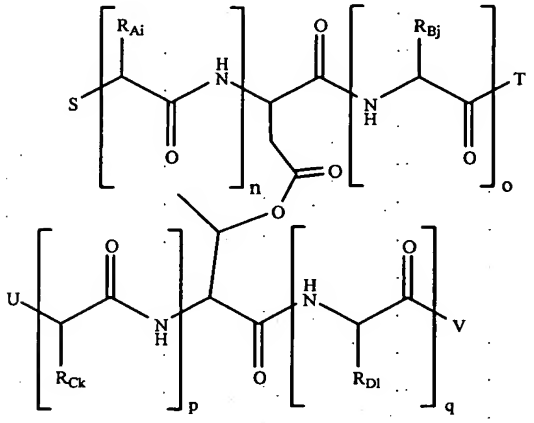
151. (New) A polymer of the structure:



wherein n, o, p and q are 0 or a positive integer; i, j, k and l, if existing, are from 1 to n, o, p and q, respectively; each $R_r$, $R_{Ai}$, $R_{Bj}$, $R_{Ck}$ and $R_{Dl}$ is independently selected from the group consisting of -$(CH_2)_3$-NH-C$(NH_2)$(=NH), -$(CH_2)_3$-NH-C(OH)(=NH),

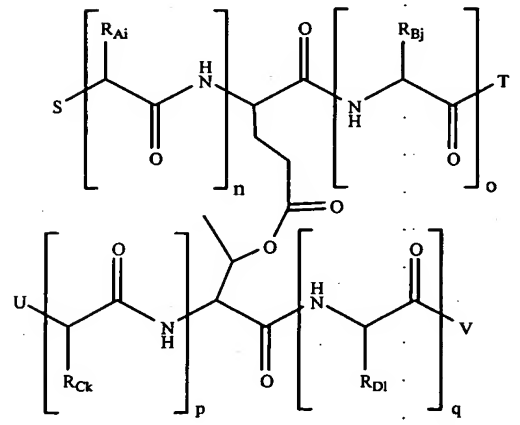
$-(CH_2)_4NH_2$, $-(CH_2)_4OH$, $-CH_2OH$, $-CHOHCH_3$, $-CH_2-C_6H_4$ p-OH, $-CH_2CONH_2$, $-CH_2COOH$, $-(CH_2)_2CONH_2$, $-(CH_2)_2COOH$, $-CH_2SH$, –H, $-CH_3$, $-CH_2c(C=CH-N=CH-NH-)$, $-CH(CH_3)CH_2CH_3$, $-CH_2CH(CH_3)_2$, $-(CH_2)_2SCH_3$, $-CH_2C_6H_5$, $-CH_2-c(C=CH-NH-Ph-)$, and $-CH(CH_3)_2$; and, wherein S, T, U and V is independently selected from the group consisting of H, OH, $NH_2$ or a proteinaceous material.

152. (New) A polymer of the structure:




wherein n, o, p and q are 0 or a positive integer; i, j, k and l, if existing, are from 1 to n, o, p and q, respectively; each $R_r$, $R_{Ai}$, $R_{Bj}$, $R_{Ck}$ and $R_{Dl}$ is independently selected from the group consisting of $-(CH_2)_3-NH-C(NH_2)(=NH)$, $-(CH_2)_3-NH-C(OH)(=NH)$, $-(CH_2)_4NH_2$, $-(CH_2)_4OH$, $-CH_2OH$, $-CHOHCH_3$, $-CH_2-C_6H_4$ p-OH, $-CH_2CONH_2$, $-CH_2COOH$, $-(CH_2)_2CONH_2$, $-(CH_2)_2COOH$, $-CH_2SH$, –H, $-CH_3$, $-CH_2c(C=CH-N=CH-NH-)$, $-CH(CH_3)CH_2CH_3$, $-CH_2CH(CH_3)_2$, $-(CH_2)_2SCH_3$, $-CH_2C_6H_5$, $-CH_2-c(C=CH-NH-Ph-)$, and $-CH(CH_3)_2$; and, wherein S, T, U and V is independently selected from the group consisting of H, OH, $NH_2$ or a proteinaceous material.

153. (New) A polymer of the structure:



wherein n, o, p and q are 0 or a positive integer; i, j, k and l, if existing, are from 1 to n, o, p and q, respectively; each $R_r$, $R_{Ai}$, $R_{Bj}$, $R_{Ck}$ and $R_{Dl}$ is independently selected from the group consisting of $-(CH_2)_3-NH-C(NH_2)(=NH)$, $-(CH_2)_3-NH-C(OH)(=NH)$, $-(CH_2)_4NH_2$, $-(CH_2)_4OH$, $-CH_2OH$, $-CHOHCH_3$, $-CH_2-C_6H_4$ p-OH, $-CH_2CONH_2$, $-CH_2COOH$, $-(CH_2)_2CONH_2$, $-(CH_2)_2COOH$, $-CH_2SH$, –H, $-CH_3$, $-CH_2c(C=CH-N=CH-NH-)$, $-CH(CH_3)CH_2CH_3$, $-CH_2CH(CH_3)_2$, $-(CH_2)_2SCH_3$, $-CH_2C_6H_5$, $-CH_2-c(C=CH-NH-Ph-)$, and $-CH(CH_3)_2$; and, wherein S, T, U and V is independently selected from the group consisting of H, OH, $NH_2$ or a proteinaceous material.